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for energy consumers

To network companies,
generators, suppliers, consumers
and their representatives and
other interested parties.

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Date: 6 December 2013

Dear colleague

Consultation on our methodology for assessing the equity market return for the purpose of setting RIIO price controls

On 22 November 2013 we published our 'Assessment of RIIO-ED1 business plans and fast-tracking' letter and associated documents.¹ This was part of the RIIO-ED1 price control review for the electricity distribution networks operators (DNOs). In our publication we stated that we would consult on our methodology for assessing the equity market return in the light of the position taken by the Competition Commission (CC) in its provisional determination for Northern Ireland Electricity (NIE) published on 12 November 2013.² This letter explains the issues that arise and invites interested parties to respond with substantive evidence to help us reach an enduring evidence-based conclusion on the methodology we should adopt. Please submit any written responses to RIIO.ED1@ofgem.gov.uk by 10 January 2014. Unless clearly marked as confidential, responses will be published on our web site.

Our assessment of the equity market return is important for our determination of the revenues that the DNOs will be allowed to recover from customers over the RIIO-ED1 period (1 April 2015 – 31 March 2023). The equity market return is a factor in our assessment of the returns that an efficiently run company that delivers its outputs should be able to achieve, which in turn impacts on consumers' energy bills.

Our present review, RIIO-ED1, is focused on DNOs, but the issue will be equally relevant when we next review allowed revenues for the gas distribution and electricity and gas transmission network operators (RIIO-T2 and GD2). It will not affect the established RIIO-T1 and GD1 controls.

¹ <https://www.ofgem.gov.uk/ofgem-publications/84600/assessmentofriio-ed1businessplansletter.pdf>

² Having notified parties on 8 November 2013. http://www.competition-commission.org.uk/assets/competitioncommission/docs/2013/northern-ireland-electricity-price-determination/131112_main_report.pdf

The RIIO framework seeks to deliver long-term value-for-money network services for existing and future consumers. To this end we take a longer-term view of financeability. We have accordingly adopted a clear and predictable approach to establishing the financial parameters of the price control package. To date, our approach to the equity market return has been based on a long-term assessment of historical data. Recognising there is considerable methodological and judgemental uncertainty in assessing contemporary market evidence, we have considered that history gives us a better and a more objective basis for our longer-term forward-looking view. This has been broadly consistent with other regulators' practice and with the recommendations of a 2003 study jointly commissioned by the economic regulators (Smithers report).³ We developed our overall approach to financeability under RIIO in consultation with stakeholders.

In its provisional determination for NIE, the CC set out a different approach to the equity market premium. The CC's approach gives greater weight to contemporary market evidence. The CC, or its successor the Competition and Markets Authority, is the appeal body for the RIIO-ED1 settlements. Its position on this important assessment is therefore especially relevant.

Adopting an approach that gives greater weight to contemporary market evidence in our assessment of equity market returns would have the effect of reducing allowances for the cost of equity for RIIO-ED1. However, we consider that the question of methodology has wider implications for policy and risk. The combined effects from such a change may include some offsetting increases in the cost of capital and increased volatility in network costs from control period to control period.

We are therefore consulting on the relative merits of our existing approach to the equity market return versus a move to one that gives greater weight to contemporary market evidence.

In reaching our decision, our objective will be to protect the interests of existing and future consumers, recognising that changing our methodology could have negative as well as positive impacts on consumers.

We set out in Appendix 1 the issues we consider are relevant and the evidence we seek to inform our decision.

Should we decide it would be appropriate to change our methodology, and also to confirm our draft fast-track determination, we will determine an adjustment to the cost of equity allowances set out in the business plans for the companies proposed for fast-track. These are the four DNOs owned by Western Power Distribution (WPD). It would be for WPD to decide whether to accept any such adjustments or revert to the slow-track process.

I summarise our consultation questions below:

A direct translation of the Competition Commission's estimates to DNO cost of equity allowances

- Do you agree with our direct translation of the CC's equity market return estimate to DNO cost of equity allowances?

Implications for risk

- Can you provide evidence on the impact of giving greater weight to contemporary market evidence on perceived systematic and regulatory risk?

³ 'A Study into Certain Aspects of the Cost of Capital for Regulated Utilities in the U.K.', Stephen Wright, Robin Mason and David Miles, Smithers & Co, February 2003

Financing issues

- Do you think changing our methodology for the equity market return would impact on interest costs for DNOs? If so, how would this need to be accommodated in our approach to the financial package or the regulatory package more widely?

Investment incentives

- How do you consider that the choice of methodology for determining the appropriate equity market return impacts on investment incentives? Is there any evidence that you can provide?

Eight-year RIIO price control period

- To what extent do you think the merits of the alternative approaches to the assessment of the equity market return are affected by the eight-year RIIO control period?

Next steps

We invite interested parties to respond by 10 January 2014. We plan to hold an open workshop at this address on 7 January 2014. Parties wishing to attend the workshop should register by email to RIIO.ED1@ofgem.gov.uk.

The DNOs which have not had their settlements finalised early (slow-track) will resubmit their business plans in March 2014. We have asked them to prepare these plans on the assumption that we will maintain our existing methodology for assessing equity market returns, ie the same basis as we have assessed their current plans. However, they should also consider what elements of their plans they would need to change if we were to give greater weight to contemporary market evidence.

Yours faithfully



Hannah Nixon
Senior Partner, SG&G: Distribution

Appendix 1: Detailed analysis and development of consultation questions

The Competition Commission's provisional determination for NIE

1.1. The CC's provisional determination sets out its provisional conclusions for NIE's allowed revenues for the period 1 January 2013 to 30 September 2017. NIE operates the electricity distribution and transmission network for Northern Ireland and is therefore engaged in similar activities to a DNO, albeit under a different regulatory regime. Among other things, the provisional determination provided for an allowed rate of return on the regulatory asset base (weighted average cost of capital, or WACC) for NIE of 4.1 per cent per annum.

1.2. This WACC is similar to the WACC implied in DNO business plans, together with the current level of the RIIO cost of debt index. However, we have identified⁴ a material underlying difference in approach between the CC's estimate and the estimates adopted historically by Ofgem and other regulators for the return that investors require for investing in the equity market. It appears to us that the CC gives greater weight to contemporary market evidence. This market return estimate forms the basis for our cost of equity assessment (after making an adjustment to reflect the evidence that returns on investments in DNOs are less risky than investments in the equity market as a whole).

1.3. We consider the CC's point estimate for NIE's cost of equity is consistent with a market return of 6.0 per cent.⁵ We tested the DNOs business plans against a range of realistic cost of equity scenarios. Our central reference point for this testing was a cost of equity allowance of 6.3 per cent and a market return estimate of 6.85 per cent (see Table 1 below). We provide further information on the rationale behind this estimate of 6.85 per cent for the equity market return in Appendix 2.

The evidence basis for the CC's estimate of the equity market return

1.4. The CC considered a wide range of evidence to inform its estimate, which we summarise below. The table and paragraph references indicate the relevant locations in the CC's provisional determination report.

- The arithmetic average of annual returns in the UK equity market as recorded in the 'DMS dataset' since 1900 is 7.1 per cent (Table 13.6)
- Averages of geometrically-annualised returns over periods longer than one year are generally lower (Table 13.7), leading the CC to estimate a range of about 6 to 7 per cent (paragraph 13.133)
- An historical average dividend yield of 4.5 per cent and annual real growth in dividends of 1 per cent would suggest an underlying expected market return of 5.5 per cent (paragraph 13.134)
- A number of studies provide evidence, albeit controversial, that expected returns have been lower since 1950 than before 1950 (paragraph 13.135)

⁴ See paragraph 3.40 of our 'Assessment of the RIIO-ED1 business plans'.

⁵ See paragraph 13.175 of the CC provisional determination.

- The current dividend yield, about 3.6 per cent, is below the historic average, suggesting that expected returns are now about 1 per cent lower than the past average (paragraph 13.135)
- Estimates of the equity market premium in the Bank of England Quarterly Bulletin – based on the essentially arbitrary assumption that the future long term growth in dividends per share is equal to an estimate of the potential growth in the economy (citing evidence that it has been significantly less) – suggests market return expectations have fluctuated around 6.5 per cent but have declined markedly since the credit crunch (13.138)
- Although the return on the market is a relatively stable parameter, it still exhibits considerable volatility and cannot be regarded as fixed over time (paragraph 13.144)
- The long term decline in the risk-free rate (evidenced by the prolonged five-year period of low gilt yields, paragraph 13.121) should logically correspond with an increased demand for equities (paragraph 13.144)
- There is evidence of a clear relationship between real interest rates and real returns on equities in the subsequent five-year period (paragraph 13.144)
- A forward-looking expectation of a market return of 7 per cent does not appear credible given economic conditions observed since the credit crunch (paragraph 13.144)
- A number of sources of evidence suggest the equity risk premium is in the range 4 to 5 per cent (paragraph 13.145) which combines with the CC's view of the forward-looking risk-free rate of 1 to 1.5 per cent (paragraph 13.122) to give a range of 5 to 6.5 per cent for the equity market return.

1.5. We observe that the last seven items in the list above suggest that the CC has given significant weight to contemporary market evidence, in particular reflecting the period of relatively low interest rates and consequential implications for equity returns over the period since the credit crunch.

1.6. Our assessment of the contemporary evidence broadly parallels the CC's. The evidence from transaction values and traded shares shows that the market has valued regulated networks at more than their regulatory asset values, and a valuation premium has persisted for a number of years. Some of the valuation premium can be explained by anticipated operating outperformance (and perhaps bidders' optimism bias in some cases). However, we can infer that some of the premium reflects a difference between the returns the market requires at present, in a low interest rate environment, and the longer term.

1.7. The CC provisional determination highlights a link between the market's current perspective on equity returns, which has been evident for a quite a prolonged period, and the period of exceptionally low interest rates. The CC points out that that these rates have been influenced by central bank policies, but also cites the opinion of economists Elroy Dimson, Paul Marsh and Mike Staunton (DMS) in the authoritative Credit Suisse Global Investment Returns Yearbook (2013 edition) that bond yields should now provide a reasonable guide to prospective returns (paragraph 13.119).

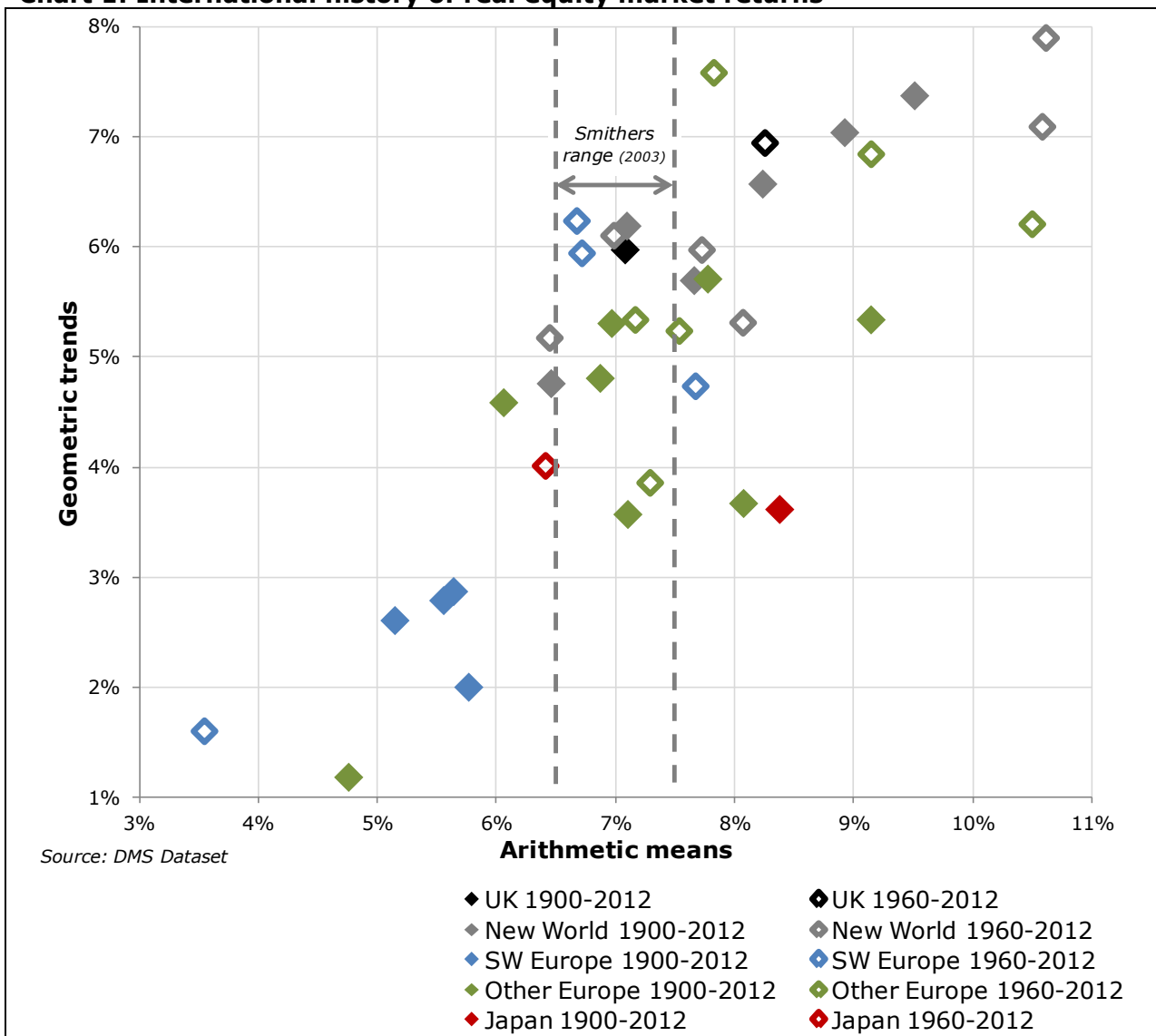
1.8. Indeed, DMS have argued for a number of years⁶ that future equity returns are unlikely to be as positive as the returns experienced over the past century: the equity risk premium is likely to have fallen as stock markets have made it easier to build diversified portfolios and investors, particularly in the second half of the last century, benefitted from many events turning out better than expected (no third world war, the end of the cold war,

⁶ Notably in 'Triumph of the Optimists', Princeton University Press, October 2001

release of labour from productivity improvements in agriculture, new technology and improvements in corporate governance). This perspective has been reinforced in recent years by a sustained period of low interest rates. Their arguments carry some authority but they do not yet represent a consensus view.

1.9. The CC’s position contrasts with Ofgem’s long-standing approach which has been informed by a 2003 study jointly commissioned by the economic regulators.⁷ This study identified that there was considerably less uncertainty around the equity market return than there was around its separate components of the risk-free rate and the equity risk premium. The study recommended a range of 6.5 to 7.5 per cent for the equity market return, based on international evidence not just from the UK experience. Chart 1 puts this range in the context of equity returns through to the end of 2012 across the countries analysed in the DMS Dataset.⁸

Chart 1: International history of real equity market returns



⁷ 'A Study into Certain Aspects of the Cost of Capital for Regulated Utilities in the U.K.', Stephen Wright, Robin Mason and David Miles, Smithers & Co, February 2003

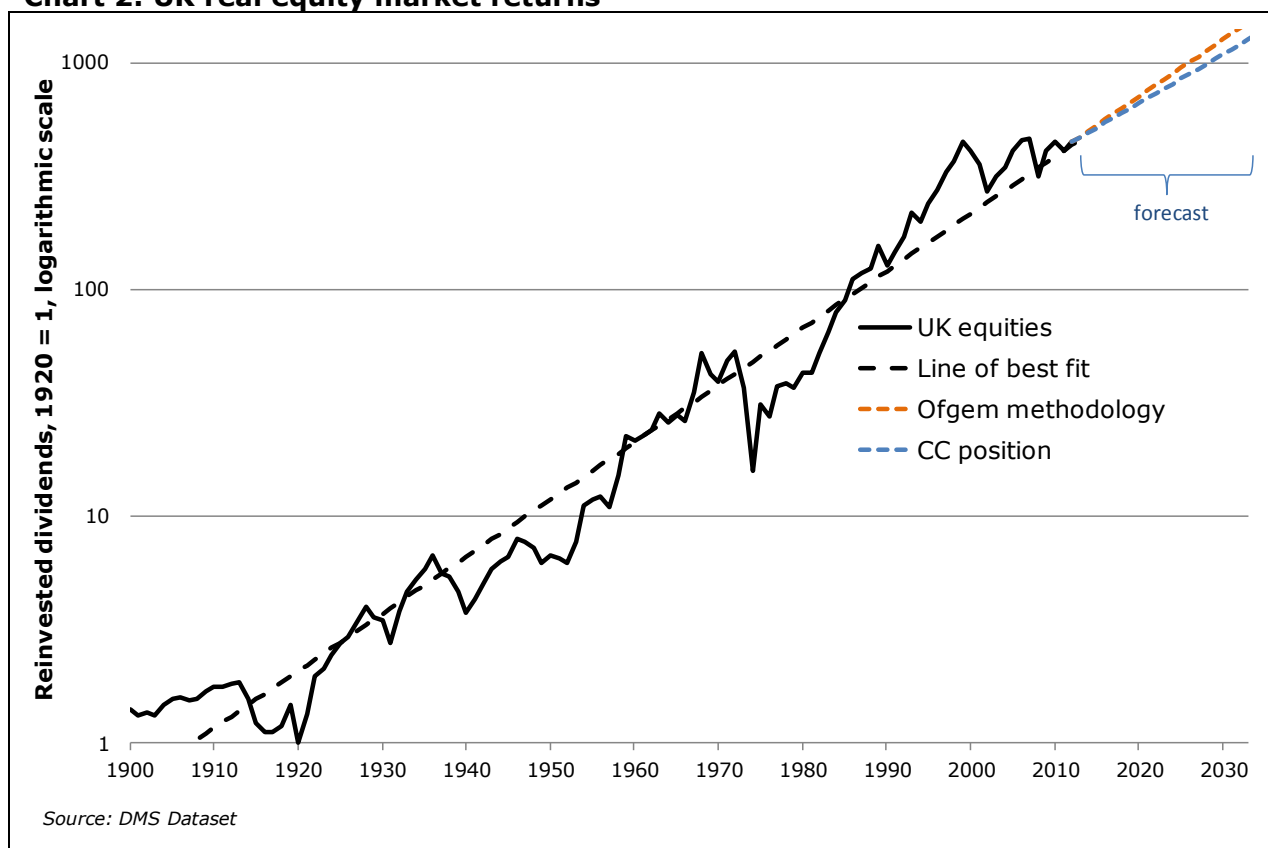
⁸ We broadly characterise the countries by geography as there appears to be a significant correlation with market performance, especially in the first 50 years of the last century. The adverse market effects of the two world wars were particularly severe in continental Europe and Japan, distorting average returns over the full 113-year period. We consider performance of the UK/New World markets (UK, US, Australia, New Zealand, Canada, South Africa) may be a more realistic reference point for a forward-looking assessment.

1.10. Regulators have broadly adopted estimates of the market return within this range and deducted their estimates of the risk-free rate to derive their estimates for the equity risk premium.

1.11. The range recommended in the Smithers 2003 report was informed by the history of equity returns up to that date. Our calculations from the DMS Dataset show that the arithmetic average annual real rate of return on UK equities for the 103 year period 1900 to 2002 was a little over 7.4 per cent. The average for the 113 year period to 2012 was 7.1 per cent. This suggests that the methodology used in the Smithers 2003 report might now generate a lower range by 0.3 to 0.4 per cent. However, the DMS Dataset calculates real returns after adjusting for movement in RPI and is thus affected by the same issues that affect our assessment and which we describe in Appendix 2. We note that the 113-year average at 7.1 per cent remains within the range.

1.12. The pattern of equity market returns over the last 113 years in the UK is illustrated in Chart 2. Ofgem’s established methodology is broadly equivalent to assuming a continuation of the slope in future years (characterised⁹ by the dotted orange line), while the CC’s position assumes a lower gradient (characterised by the dotted blue line), reflecting its analysis of the evidence that future equity returns are liable to be lower than they have been since the middle of the last century.

Chart 2: UK real equity market returns



1.13. We emphasise that we are not primarily consulting on the specific value for the equity market return estimated by the CC; we are consulting on the broader policy question of whether to adjust our methodology from a long-term to more of a contemporary

⁹ The chart presents returns on a geometric basis, on a logarithmic scale, while the generally accepted basis for assessing allowed returns is on an arithmetic mean basis (which is less easy to represent graphically). We have characterised Ofgem’s methodology as a reinvested dividend growth rate equal to, and CC’s position 0.85 per cent below, the historic rate over the past 113 years.

evidence basis. Nevertheless, we invite observations from interested parties on the evidence basis for the CC's estimate of the equity market return.

A direct translation of the Competition Commission's estimates to DNO cost of equity allowances

1.14. We calculate a direct translation of the CC's estimate of the equity market return would reduce DNO cost of equity allowances by approximately 0.8 per cent, being the difference between our central reference point for testing DNO business plans of 6.3 per cent and the result of 5.5 per cent shown in Table 1 below.

Table 1: Direct translation of the CC's estimate

	Using existing methodology		CC estimate for equity market return	
	<i>DNO fast track proposals</i>	<i>BP central reference point</i>	<i>CC provisional determination: NIE</i>	<i>DNO equivalent</i>
Gearing	65.0%	65.0%	50.0%	65.0%
Equity market return	7.25%	6.85%	6.00%	6.00%
Risk-free rate	2.00%	1.60%	1.25%	1.25%
Equity risk premium	5.25%	5.25%	4.75%	4.75%
Asset beta*	0.38	0.38	0.42	0.38
Debt beta	0.10	0.10	0.10	0.10
Equity beta	0.90	0.90	0.75	0.90
CoE	6.70%	6.30%	4.80%	5.50%

Source: Ofgem interpretation of CC provisional point estimate cost of equity for NIE
** Note: A DNO asset beta has been inferred from CC's debt beta assumption for illustrative purposes only*

1.15. We do not consider the CC's analysis qualifies our assessments of DNO betas. This is because the CC drew from Ofgem's beta assessments as its evidence base for its own beta estimate.

1.16. We also do not consider the CC's estimate of NIE's cost of debt has a material impact on our cost of debt methodology or on our assessments of other components of the cost of capital. This is because its discussion of the cost the debt was focused on issues specific to the company and to Northern Ireland.

Do you agree with our direct translation of the CC's equity market return estimate to DNO cost of equity allowances?

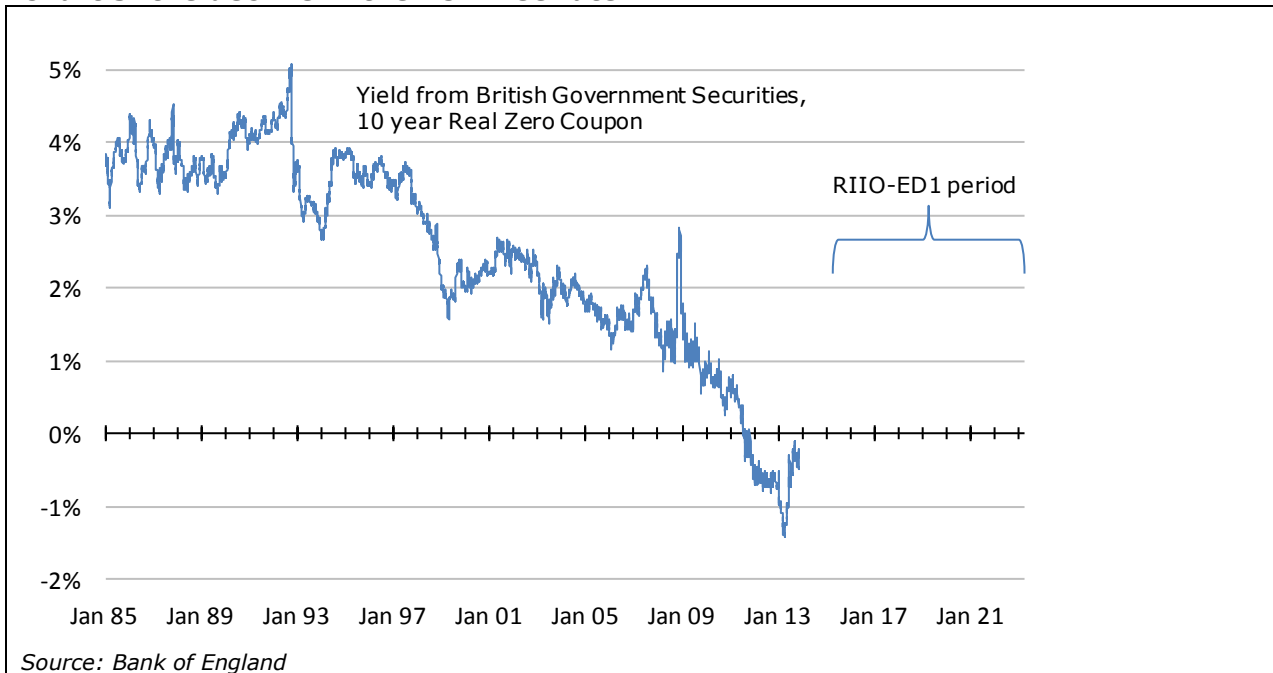
Implications for risk

1.17. Because equity betas for regulated networks have been assumed to be close to unity, regulators' cost of equity assessments have not been critically sensitive to how the equity market return is decomposed into its separate risk-free rate and equity risk premium components.

1.18. The risk-free rate, as proxied by treasury bill or gilt yields, has declined over the last 20 years, see Chart 3 below. Regulators' estimates of the equity risk premium have increased to accommodate this decline, thereby maintaining a relatively stable equity market return estimate. For the 1994 Distribution Price Control, the then Director General of Electricity Supply estimated a market return of 7 per cent and a risk-free rate of 3 to 4

per cent, implying a relatively low equity risk premium of 3 to 4 per cent. For the RIIO-GD1 price control review, Ofgem’s point estimate for the market return was very similar at 7.25 per cent but with an estimated range for the risk-free rate of 1.7 to 2 per cent and a relatively high equity risk premium of 4.75 to 5.5 per cent.

Chart 3: the decline in the risk-free rate



1.19. The CC’s approach implies a different dynamic between these estimates and a different dynamic over time.

1.20. One of the observations of the 2003 study was that, with betas close to unity, regulatory assessments of the cost of equity are affected more by the equity market return estimate than by how it is broken down into its risk-free rate and equity risk premium components. A stable or mechanistically-derived estimate of the market return would provide a degree of stability to cost of equity assessments. By implication, this would reduce the scope for regulatory assessments to be affected by current market conditions or variability in regulatory interpretation.

1.21. Giving greater weight to contemporary market evidence may therefore open up regulatory assessments to more volatility and greater uncertainty. It would require Ofgem at each price review to reinterpret market conditions and assess how much weight it should give to that reinterpretation. This uncertainty might increase sensitivity of equity investors to actual or perceived systematic and regulatory risk, and consequently a detrimental impact on the cost of capital.

Can you provide evidence on the impact of giving greater weight to contemporary market evidence on perceived systematic and regulatory risk?

Financing issues

1.22. A reduction in the allowed cost of equity would, other things being equal, reduce DNO revenues and, accordingly, the cash flows funds from their operations. Logically, this would reduce the capacity of DNO businesses to support debt.

1.23. Unless it coincided with a reassessment of the risks faced by network businesses and the requirement for headroom in a company's financial structuring, this would require DNOs either (i) to reduce their debt levels or (ii) to accept lower credit ratings. The first could lead to a sector-wide de-gearing at a time of very low interest rates, which could reduce the scope to harness low interest rates for the ultimate benefit of consumers. The second could lead to increased interest costs for DNOs.

1.24. De-gearing or re-rating may create a divergence between the debt profile assumption embedded in our cost of debt index and the debt profile companies will realistically be able to achieve. With rates as low as they are at present, each year's new debt reduces the index by about 0.2 per cent (eg 2013-14 is 2.92 per cent, 2014-15 is 2.72 per cent). Our calculations suggest companies would need to reduce debt levels by about 10 per cent to maintain credit metrics (ie a reduction in gearing to a little below 60 per cent from the 65 per cent assumed by DNOs, equivalent of displacing one year's worth of new debt with curtailed dividends or new equity). Implicitly, were we to make corresponding adjustments to our cost of debt index methodology and given our 10-year trailing basis, this would translate to an underlying increase in the cost of debt by about 0.2 per cent.

Do you think changing our methodology for the equity market return would impact on interest costs for DNOs? If so, how would this need to be accommodated in our approach to the financial package or the regulatory package more widely?

Investment incentives

1.25. In principle, investment incentives might be more finely calibrated if cost of capital allowances are made consistent with the current market view of forward-looking expected returns. A potential problem with using a relatively stable measure of equity market return is that it might create incentives for over-investment when the market anticipates lower returns, and deter investment when the market anticipated higher returns.

1.26. In practice, the methodological and judgemental issues involved in assessing a current market view may make that kind of fine calibration difficult. We also consider that the RIIO process builds in strong incentives for companies to invest efficiently and where necessary to deliver desired outputs. We therefore consider a longer-run view of the equity market return to have no more than a second order effect on incentives.

How do you consider that the choice of methodology for determining the appropriate equity market return impacts on investment incentives? Is there any evidence that you can provide?

Eight-year RIIO price control period

1.27. RIIO price control periods have eight year durations. It may be significant that the CC's final determination for NIE will take place part way through its control period with around three and a half years before the control period comes to an end.¹⁰ The CC may, as a result, be able to reach a more confident view of the equity market return over that period than we would be able to for a period that ends nearly a decade later.

To what extent do you think the merits of the alternative approaches to the assessment of the equity market return are affected by the eight-year RIIO control period?

¹⁰ The control period subject to the CC inquiry is 1 January 2013 to 30 September 2017.

Appendix 2: Explanation of our central reference point for testing DNO business plans

2.1. This appendix provides more information on the equity market return estimate of 6.85 per cent. We tested the DNOs' business plans against a range of realistic cost of equity scenarios. Our central reference point for this testing was a cost of equity assumption of 6.3 per cent. This was derived from the equity market return estimate of 6.85 per cent. Table 1 in Appendix 1 shows the relationship between these two percentages.

2.2. Our decision in December 2012 for RIIO-GD1 provided an allowance for equity returns of 6.7 per cent for gas distribution network operators based on, among other things, an assessment of the equity market return at 7.25 per cent. We decomposed our assessment into a risk-free rate of 2.0 per cent and an equity risk premium of 5.25 per cent. This assessment was consistent with the proposals in the DNOs' business plans.¹¹

2.3. We stated in our 'Assessment of the RIIO-ED1 business plans' document that we had considered a wide range of market evidence that has emerged since our RIIO-GD1 decision, including transaction values for regulated network businesses. We had also reflected on statements of and reports for other regulators and we have analysed the impact of the Office of National Statistics' (ONS) conclusion on its review of the Retail Prices Index (RPI), announced on 10 January 2013.

2.4. We recognised there are dangers in giving undue weight to new evidence, that regulatory assessments over the years have generally been informed by longer-term perspectives and that the cost of equity is necessarily an uncertain estimate. However, we considered that the balance of uncertainty was on the downside relative to DNO assumptions.

2.5. Although we considered the balance of uncertainty in light of all the new evidence, our analysis of the Office of National Statistics (ONS) conclusion following its recent review of the Retail Prices Index (RPI) identified a particularly material issue.

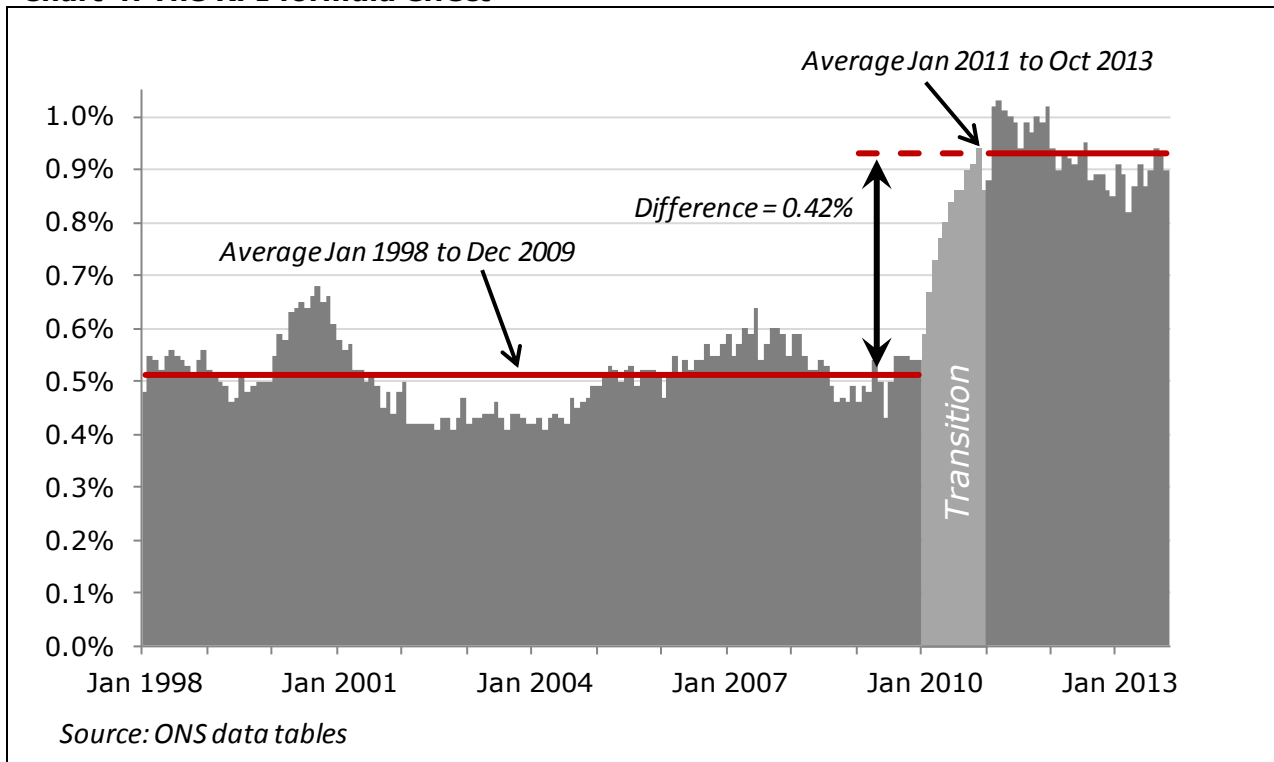
2.6. The ONS announced on 10 January 2013 that it will not change the methodology for computing the RPI, and it committed to make only routine adjustments in future. That day saw a sizeable reduction in yields on 10-year index-linked gilts, representing the second largest one-day movement (a little over 0.4 per cent) in 10-year breakeven inflation since index-linked gilts were introduced in 1985. Index-linked assets evidently became more attractive to investors.

2.7. The ONS announcement concluded its review of the RPI. The review stemmed from 2010, when ONS changed the way it collects data for clothing items. This change aggravated the 'formula effect', caused by a statistical method used in the RPI, known as the Carli formula. The "*fundamental problem of the Carli formula*", in ONS's words, "*is its propensity to have an upward bias*". The Consumer Prices Index (CPI), by contrast, is not afflicted with this problem.

2.8. The ONS tracks the formula effect as a component of the difference between RPI and CPI inflation. The Chart 4 below shows the formula effect monthly from 1998.

¹¹ Leaving aside ENWL, which proposed an allowance of 6.8 per cent.

Chart 4: The RPI formula effect



2.9. On 10 January 2013, the National Statistician concluded that *"the formula used to produce the RPI does not meet international standards"* and the UK Statistics Authority subsequently de-designated it as a National Statistic.

2.10. Ofgem uses the RPI to index the RAV, principally because RPI remains the indexation basis for index-linked bonds issued by network operators. The ONS conclusion makes the RPI-indexed RAV a relatively attractive asset for investors and, as the gilts market movement showed, investors would implicitly require lower yields. The underlying cost of equity would not have changed but, for RPI-indexed assets, it implies the need for equity return allowances has fallen by about 0.4 per cent.

2.11. The ONS conclusion therefore suggests a need to recalibrate allowances for returns on RPI-indexed assets (in particular the real risk-free rate) by 0.4 per cent, downwards. Two further considerations confirm our view that such a recalibration is appropriate.

ONS are unlikely to make further changes that could offset the formula effect

2.12. Statements made by the ONS and the UK Statistics Authority indicate a commitment not to make more than routine changes.

2.13. In CPAC(13)01 the ONS recommended to the Consumer Prices Advisory Committee that:

"the basic formulation of the RPI is accepted as currently defined and that any future changes should be limited to issues such as the annual update of the basket and weights, improvements to data validation and quality assurance etc."

2.14. The UK Statistics Authority stated in paragraph 1.2.2 of the March 2013 Assessment Report 246 'The Retail Prices Index':

"The Statistics Authority notes and supports the decision by the National Statistician that, to meet the needs of existing users of the RPI in its current form, ONS will not amend its basic formulation."

2.15. Further, in paragraph 3.5 of that report, it noted the following in support of its decision to cancel the designation of the RPI as a National Statistic:

"ONS now proposes that 'the basic formulation of the RPI is accepted as currently defined and that any future changes should be limited to issues such as the annual update of the basket and weights, improvements to data validation and quality assurance etc.' The Assessment team considers that the decision to effectively freeze the formula used at the elementary aggregate level in the RPI, and contemplate only 'routine' changes is inconsistent with the requirement in the Code to seek to achieve continuous improvement."

2.16. These statements do not exclude the possibility that the formula effect might move in future, in either direction. We do not consider they provide a basis for discounting the impact of the formula effect change since 2010.

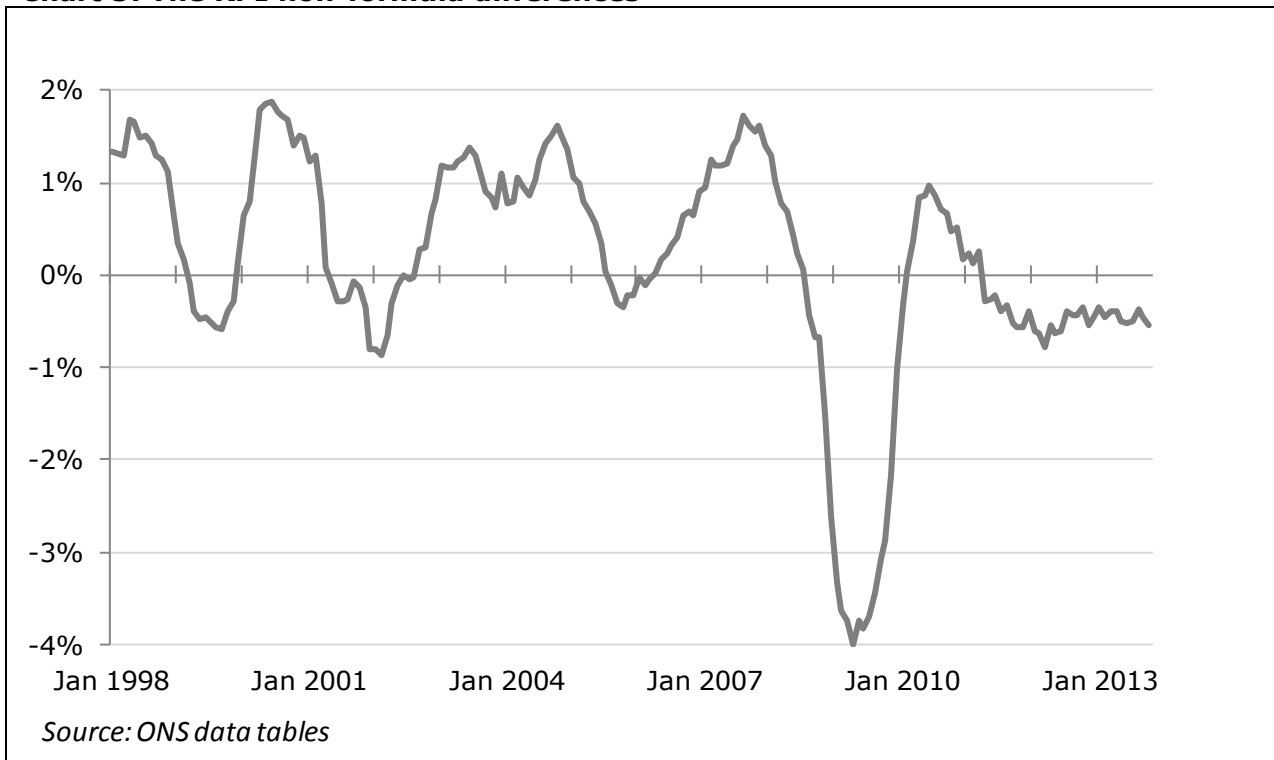
There is no need to adjust for other components of the CPI-RPI wedge

2.17. The wedge between CPI and RPI is analysed by the ONS each month between the formula effect and non-formula differences.

2.18. The non-formula differences between RPI and CPI have been negative in recent years, as shown in Chart 5 below. Our analysis of these differences from ONS data shows that the main driver has been housing components. Housing components include owner-occupier's housing depreciation, council tax, rent, water and other charges, repairs and maintenance charges, and dwelling insurance. Housing components are excluded from the CPI. The November 2011 OBR working paper on 'The long-run difference between RPI and CPI inflation'¹² demonstrated that the housing contribution to the wedge between RPI and CPI has moved broadly in line with house price growth. In other words, the relatively low (or negative) contribution of non-formula effects to the wedge in recent years is largely a function of relatively low (or negative) house price growth.

¹² [Office for Budget Responsibility, The long-run difference between RPI and CPI inflation](#)

Chart 5: The RPI non-formula differences



2.19. We are not aware of any argument in principle why housing costs should be excluded from a general measure of inflation for the purpose of indexing the RAV. It also appears that the relatively low (or negative) contribution of housing costs to the wedge is liable to be a temporary factor.

2.20. We therefore consider it would be inappropriate to use relatively low housing inflation in recent years as a reason to disregard the impact of a marked and enduring change in the formula effect.

Conclusion

2.21. We consider that the effect of the ONS conclusion has been to reduce the yields required by investors in RPI-indexed assets by about 0.4 per cent. Accordingly, we recalibrated our estimate of the long-run real risk-free rate from the 2.0 per cent we used in our RIIO-GD1 decision to 1.6 per cent and reduced our estimate of the real (RPI) equity market returns to 6.85 per cent.